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REFRIGERATOR  
[Resizoko]

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### Claim

A type of refrigerator characterized by the fact that it comprises a door that can be opened/closed on front of the refrigerator, a door inner box on the inner side of the door and a storage shelf attached and engaged to the door inner box, a guardrail for falling bottles, etc., on said storage shelf, a slider part set in a protruding shape on the two end L-shaped portions of said guardrail, a guide rail part that can accommodate, in a back-and-forth sliding way, the L-shaped portions of said guardrail and the protruding slider on the right and left wall portion of said storage shelf, and a storage part that has the tip of said guide rail part, is concave shaped and can accommodate said guardrail such that it can rotate.

### Detailed explanation of the invention

#### Industrial application field

The present invention pertains to a type of refrigerator that has a shelf for carrying objects in a storage chamber for cooling and storing objects.

#### Prior art

For refrigerators developed in the recent years, the shelf has a guardrail engaged to the front wall for preventing falling of the storage container.

In the following, an explanation will be given regarding the refrigerator in the prior art.

Figure 5 is an oblique view illustrating a refrigerator in the prior art having a guardrail attached on the storage shelf. Figure 6 is an oblique view illustrating the storage shelf shown in Figure 5.

In Figure 5, (1) represents the main body of the refrigerator; (2) represents the outer box; (3) represents the inner box of said refrigerator main body (1); (4) represents a door that can be opened/closed on the front of the refrigerator; (5) represents the door inner box of door (4); (6)

represents a storage shelf attached on said door inner box (5); (7) represents the front wall of storage shelf (6); (8) represents a guardrail; (9) represents a guide rail set on front wall (7) for sliding of guardrail (8).

In Figure 6, (10) represents a fitting portion for attaching storage shelf (6) on door inner box (5).

For the refrigerator with said constitution, the following is an explanation of its operation.

First of all, guardrail (8) is engaged to guide rail (9) set on front wall (7) of storage shelf (6) and can be slid left/right. Due to this operation, it is possible to prevent the storage container stored in the storage shelf from falling to the left/right.

Problems to be solved by the invention

However, for the aforementioned constitution of the prior art, because guardrail (8) slides left/right, when door (2) of the refrigerator is opened, the accommodated storage container rattles back-and-forth, so that feel of use of the refrigerator becomes poor. Also, a space is formed on the opposite side for shifting of guardrail (8). This is undesired.

The purpose of the present invention is to solve the aforementioned problems of the prior art by providing a type of refrigerator characterized by the fact that when the door of the refrigerator is opened in the back-and-forth direction, the accommodated storage container does not rattle back-and-forth, and there is also no space for shift of the guardrail, so that the feel of use is good.

Means to solve the problems

In order to realize the aforementioned purpose, the refrigerator of the present invention has a guide rail for the side wall of the storage shelf, and a guardrail attached on said guide rail, and said guardrail is accommodated in an accommodating portion formed on the front wall of the storage shelf.

## Operation

With this constitution, the guardrail slides back-and-forth, so that it is possible to prevent the storage container from rattling back-and-forth, and the space is eliminated.

## Application examples

In the following, an explanation will be given regarding an application example of the present invention.

Figure 1 is an oblique view of the storage shelf in an application example of the present invention. Figure 2 is a cross-sectional view taken across A-A in Figure 1. Figure 3 is a cross-sectional view taken across B-B in Figure 1. Figure 4 is an oblique view illustrating the refrigerator with said storage shelf attached in it.

In Figure 1, (11) represents a storage shelf; (12) represents a side wall; (13) represents a front wall; (14) represents a guide rail set on side wall (12); (15) represents a guardrail; (16) represents an accommodating portion for accommodating guardrail (15) set on front wall (13); (17) represents a fitting part for attaching storage shelf (6) on door inner box (5). In Figure 2, (18) represents a slider part set on the two ends of guardrail (15).

In the following, an explanation will be given regarding the operation of the refrigerator with said constitution.

As guardrail (15) slides on guide rail (14) set on side wall (12), it is possible to prevent back-and-forth rattle of the storage container, and, by accommodating guardrail (16) in accommodating portion (16) so that it can be rotated forward, it is possible to use it with little ineffective space.

As explained above, according to the present application example, the guardrail is attached on the guide rail set on the side wall. Because the guardrail accommodating portion is set on the front wall of the storage container, it is possible to prevent back-and-forth rattle of the storage container when the door is opened/closed. Also, because there is an accommodating portion of the guardrail, there is no space when the guardrail shifts.

#### Effect of the invention

As explained above, according to the present invention, on the left and right side wall portion of the storage shelf, there is a guide rail for sliding of a guardrail, and, on the front wall of the storage shelf, there is an accommodating portion for accommodating the guardrail. Also, protruding slider portion is set on the L-shaped portion of the guardrail. As a result, when the door is opened/closed, it is possible to prevent the storage container from rattling back-and-forth. By setting a protruding slider portion, it is possible to prevent deviation in the guardrail. Also, by setting an accommodating portion of the guardrail, it is possible to eliminate the space that would take place due to shift of the guardrail in the prior art. In addition, when the thermal insulating material filled in the door is cooled, and the door inner box shrinks, the guardrail works as a beam to prevent bowing of the storage shelf. As a result, a refrigerator with good feel of use and with excellent structure can be realized.

#### Brief description of the figures

Figure 1 is an oblique view illustrating the storage shelf in an application example of the present invention. Figure 2 is a cross-sectional view taken across A-A in Figure 1. Figure 3 is a cross-sectional view taken across B-B in Figure 1. Figure 4 is an oblique view illustrating the refrigerator of the present

invention. Figure 5 is an oblique view illustrating the refrigerator in the prior art. Figure 6 is an oblique view illustrating the storage shelf in the prior art.

- 4 Door
- 5 Door inner box
- 11 Storage shelf
- 14 Guide rail
- 15 Guardrail
- 16 Accommodating portion
- 18 Slider part

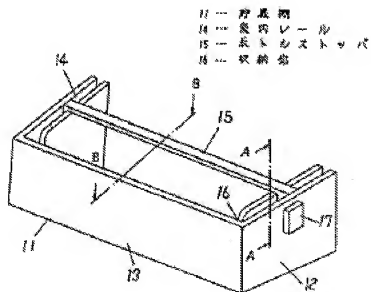


Figure 1

Legend: 11 Storage shelf

14 Guide rail

15 Guardrail

16 Accommodating portion

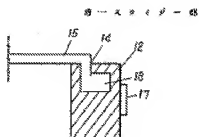


Figure 2

Legend: 18 Slider part

11… 窓枠  
14… 案内レール  
15… ボトルスタップ  
16… 嵌め部

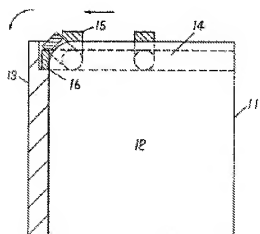


Figure 3



- Legend: 11 Storage shelf  
 14 Guide rail  
 15 Guardrail  
 16 Accommodating portion

11 収納棚  
 14 案内レール  
 15 ガードレール  
 16 収容部  
 1 扉  
 2 扉の内部  
 3 扉の内側  
 4 扉の外側  
 5 扉の内側  
 12 扉の下部

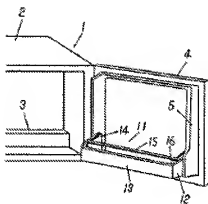


Figure 4

- Legend: 4 Door  
 5 door inner box  
 11 Storage shelf  
 14 Guide rail  
 15 Guardrail  
 16 Accommodating portion

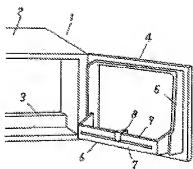


Figure 5

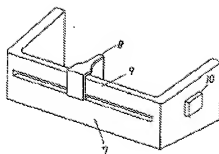


Figure 6